UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,467	09/23/2003	Tasuku Sugimoto	117282	9054

25944 7590 07/31/2007

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
NGUYEN, ALLEN H	
ART UNIT	**PAPER NUMBER**
2625	

MAIL DATE	DELIVERY MODE
07/31/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/667,467	SUGIMOTO, TASUKU	
	Examiner	Art Unit	
	Allen H. Nguyen	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/23/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 11/17/03 has been considered by the examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5, 7, 10-11, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anzai (US 6,009,242).

Regarding claim 1, Anzai '242 discloses an image forming device comprising:

image data generation means for generating image data from original data (the generator, see Abstract);

compression determining means for determining whether or not the image data generated by the image data generating means is to be compressed (i.e., the CPU 4 discriminates whether or not the status of the print mechanism 8 communicated via the control line CL is a transfer possible state of transfer data; see col. 15, lines 33-35);

compression means for compressing at least a part of the image data required to be compressed as determined by the compression determining means among the image data generated by the image data generation means (i.e., CPU 4 discriminates that the remaining amount of transfer data, which is being transferred, is larger than a predetermined amount, it writes compressed data obtained by compressing the output data; see col. 11, lines 48-55);

memory means for storing a remaining part of the image data remained non-compressed as determined by the compression determining means and the part of the image data compressed by the compression means (i.e., noted that not compressing processing data is to be performed and transferred ; see Abstract and col. 12, lines 40-45);

decompressing means for decompressing the part of the image data compressed by the compression means and stored in the memory means (i.e., the print mechanism 8 expands the compressed data to predetermined output data to perform the print processing; when it is determined that transfer data is output data, the print mechanism 8 prints the output data; see col. 6, lines 10-14);

a printing engine (a printer engine, col. 5, lines 57-65) for forming an image on an image recording medium based on the image data;

transfer means (col. 6, lines 10-15, the print mechanism 8 expands the compressed data to predetermined output data to perform the print processing using the print engine. It would have been obvious that the print mechanism has a transfer means to transfer the expanded data to the print engine) for transferring the non-compressed image data stored in the memory means and the decompressed image data decompressed by the decompressing means to the printing engine, wherein the compression determining means determines necessity of data compression on a basis of the image data and a data transferring performance (col. 1, lines 55-65) from the memory means to the transfer means (An output section 6 executes transmission processing of bit map image data developed on the RAM 5 to a print mechanism 8, col. 5, lines 51-52).

Regarding claim 2, Anzai '242 discloses the image forming device, wherein the original data are expressed in a page describing language (a page description language consisting of character codes and control codes, col. 5, line 39) and the image data comprise raster data (data to be printed is present in a raster to be currently transferred, col..7, lines 59-60).

Regarding claim 3, Anzai '242 discloses the image forming device, wherein the compression determining means employs a reference value indicative of the data transferring performance from the memory means to the transfer means (an output

section 16 transmits bit map image data developed on the RAM 15 to a print mechanism 18, col. 21, lines 20-22, fig. 16).

Regarding claim 4, Anzai '242 discloses the image forming device, wherein the memory means has a memory region where the image data amounting at least one page is storable (i.e., a bit map image area from the RAM 5, the data is directly drawn, as shown in fig. 2B. When data for one page is to be divisionally drawn; see col. 6, lines 33-36, figs. 2A-C),

wherein the compression determining means comprises: selection means for selecting a specific raster having the greatest raster length among rasters constituting the image data of the page (a first data discrimination section (realized by the CPU 4) compares the data lengths of compressed data and output data as original data of the compressed data, col. 7, lines 30-35); and judging means for judging whether or not data volume of the specific raster exceeds the reference value and determining compression with respect to all image data constituting the page if data volume of the specific raster exceed the reference value (i.e., determining means determines that the band or page of the generated image data is to be compressed, if the generated image data to be transferred to the printer exceeds a predetermined amount; see col. 26, lines 11-14).

Regarding claim 5, Anzai '242 discloses the image forming device, wherein the compression determining means comprises:

comparing means for successively comparing each raster length of each raster constituting the image data with the reference value on a raster-by-raster basis (the storage control means compares data lengths of the compressed data and the output data, col. 2, lines 18-20);

determining means for determining whether or not the image data are to be compressed if there is a raster whose raster length exceeds the reference value (the generated image data is to be compressed, if the generated image data to be transferred to the printer exceeds a predetermined amount, col. 26, lines 12-14).

Regarding claim 7, Anzai '242 discloses the image forming device, wherein the compression determining means comprises:

comparing means for successively comparing each raster length of each raster constituting the image data (the storage control means compares data lengths of the compressed data and the output data, col. 2, lines 18-20) with the reference value on a raster-by-raster basis (data to be printed is present in a raster to be currently transferred, col. 7, lines 59-60);

determining means for determining, on a raster-by-raster basis (data to be printed is present in a raster to be currently transferred, col. 7, lines 59-60), a necessity

of compression of the raster if raster length of the raster exceeds the reference value (the generated image data is to be compressed, if the generated image data to be transferred to the printer exceeds a predetermined amount, col. 26, lines 12-14).

Regarding claim 10, Anzai '242 discloses the image forming device, wherein the reference value represents a length corresponding to non-compressed (i.e., at p.7, it is determined that the number of lines to be transferred of the page data corresponding to the bit map image area (B), which is being subjected to the transfer processing, is equal to or smaller than the predetermined number of lines; see col. 10, lines 61-65, fig. 6B) and largest data volume transferable from the memory means to the transfer means within one raster image forming period (transfer data to be printed is present in a raster to be currently transferred, col. 7, lines 59-60) defined with functions of a requested image forming speed and a resolution of the printing engine (data transfer processing can be attained at higher speed, col. 10, line 41).

Regarding claim 11, Anzai '242 discloses the image forming device, wherein image data generated by the image data generation means comprise color data for performing color image printing based on the color data (i.e., the color print operation is performed by transmitting, for example, data of four designated colors (yellow, magenta, cyan, and black) via a single line, and thereafter, generating a one-line feed instruction; see col. 6, lines 21-24).

Regarding claim 16, claim 16 is a method claim of device claim 1. Therefore, claim 16 is rejected for the reason given in device claim 1.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anzai (US 6,009,242) in view of Nohnishi (US 6,906,822).

Regarding claim 6, Anzai '242 discloses the image forming device, wherein the memory means has a memory region where the image data amounting at least one page is storable (i.e., in a printer, which comprises a plurality of storage sections, for example, paint memories or frame memories on which a full-image is developed are assured for, e.g., two pages, on the RAM 5, for storing, in units of frames; see col. 11, lines 9-13),

Anzai '242 does not explicitly show wherein the compression determining means further comprises stopping means for stopping operation of the comparing means when a raster whose raster length exceeds the reference value is found, the determining means determining data compression with respect to all image data constituting the page as a result of stopping operation.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Nohnishi '822. In particular, Nohnishi '822 teaches wherein the compression determining means further comprises stopping means for stopping operation of the comparing means when a raster whose raster length exceeds the

reference value is found (i.e., the predetermined memory capacity provided for the storage of one page of compressed data is a constant, if the size of the compressed image data for a page containing a complicated print image exceeds the capacity of an area allocated in memory; see col. 1, lines 50-54), the determining means determining data compression with respect to all image data constituting the page as a result of stopping operation (storage of the data will not be possible, i.e., a memory shortage will occur. And when a memory shortage occurs, printing cannot be performed; col. 1, lines 54-56).

In view of the above, having the system of Anzai '242 and then given the well-established teaching of Noshnishi '822, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Anzai '242 as taught by Nohnishi '822, since Nohnishi '822 stated in col. 1, lines 16+ that such a modification would ensure a print controller which creates raster image data must send synchronizedly video data to the printing unit with the operation of the printing unit.

6. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anzai (US 6,009,242) in view of Nishigaki (US 7,009,722).

Regarding claim 8, Anzai '242 does not disclose the image forming device, wherein the reference value represents a fixed length equal to or smaller than a value of the largest image forming width provided by the printing engine.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Nishigaki '722. In particular, Nishigaki '722 teaches the image forming device, wherein the reference value represents a fixed length equal to or smaller than a value of the largest image forming width provided by the printing engine (i.e., a fixed-length compression method, and selects only a first compression method when a designated image size is smaller than the specific size of the printout sheet; see col. 2, lines 37-41).

In view of the above, having the system of Anzai '242 and then given the well-established teaching of Nishigaki '722, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Anzai '242 as taught by Nishigaki '722, since Nishigaki '722 stated in col. 1, lines 57-59 that such a modification would ensure methods for storing a relatively large amount of image data in a relatively small capacity memory.

Regarding claim 9, Nishigaki '722 discloses the image forming device, wherein the reference value represents a fixed length equal to or smaller than a value of the largest image forming width provided by the printing engine (i.e., a fixed-length compression method, and selects only a first compression method when a designated image size is smaller than the specific size of the printout sheet; see col. 2, lines 37-41).

The combination of Anzai '242 and Nishigaki '722 does not disclose expressly wherein the reference value represents a fixed length whose value is in a range from 70% to 90% of the largest image forming width of the printing engine.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to range from 70% to 90% of the largest image forming width of the printing engine. Applicant has not disclosed that a fixed length whose value is in a range from 70% to 90% of the largest image forming width provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant 's invention to perform equally well with either selects only a first compression method when a designated image size is smaller than the specific size of the printout sheet or the claim 9, range from 70% to 90% of the largest image forming width of the printing engine because both perform the same function of variable length (variable length compression unit 215, fig. 3).

Therefore, it would have been obvious to combine to one of ordinary skill in the art to modify Nishigaki '722 with to obtain the invention as specified in claim 9.

7. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anzai (US 6,009,242) in view of Nishigaki et al. (US 6,798,534).

Regarding claim 12, Anzai '242 discloses the image forming device, wherein the transfer means transferring the part of the image data and the remaining part of the image data to the exposure section (i.e., an output section 6 executes transmission processing of bit map image data developed on the RAM 5 to a print mechanism 8; col. 5, lines 51-52), the part of the image data having been stored in the compressed form in the memory means (i.e., CPU 4 determines that the status of the

print mechanism 8 is not a transfer possible state of transfer data, and compresses the output data and writes the compressed data in the RAM 5; col. 15, lines 35-38) and decompressed by the decompressing means (i.e., the print mechanism 8 expands the compressed data to predetermined output data to perform the print processing; when it is determined that transfer data is output data, the print mechanism 8 prints the output data; see col. 6, lines 10-14), and the remaining part of the image data being stored in non-compressed form in the memory means (i.e., it is determined in step (5) that the print mechanism is in a transfer possible state, the value of the compression flag is checked in step (9). If the flag is "0" indicating non-compression, transfer of output data is designated for the print mechanism 8 in step (10) so as to execute standard output data transfer processing; see col. 16, lines 30-36, fig. 10).

Anzai '242 does not disclose wherein the printing engine comprises a conveyance section for conveying the image recording medium along a conveying route, a photosensitive body, an exposure section for forming an electrostatic latent image on the photosensitive body, a developing unit for developing the electrostatic latent image on the photosensitive body into a visible image, and a drive means for driving the conveyance section, the photosensitive body, the exposure section, and a developing unit,

However, the above-mentioned claimed limitations are well known in the art as evidenced by Nishigaki '534. In particular, Nishigaki '534 teaches wherein the printing engine comprises a conveyance section for conveying the image recording medium along a conveying route (i.e., the copier is a tandem-type image forming system using

an electrophotographic process to output Y, M, C, Bk color images onto a transfer belt, and transfer these images onto a paper sheet with near simultaneity; see col. 3, lines 10-13, fig. 8), a photosensitive body (a unit comprising a photoconductive drum, col. 5, line 15), an exposure section (LED array, col. 3, line 16) for forming an electrostatic latent image on the photosensitive body, a developing unit (developing device, col. 3, line 15) for developing the electrostatic latent image on the photosensitive body into a visible image, and a drive means for driving the conveyance section, the photosensitive body, the exposure section, and a developing unit.

In view of the above, having the system of Anzai '242 and then given the well-established teaching of Nishigaki '534, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Anzai '242 as taught by Nishigaki '534, since Nishigaki '534 stated in col. 1 line 18 that such a modification would improve the printing productivity.

Regarding claim 13, Anzai '242 does not show the image forming device, wherein a plurality of combinations each including the photosensitive body, the exposure section, and the developing unit are arranged along the conveyance route for every color different from each other.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Nishigaki '534. In particular, Nishigaki '534 teaches the image forming device, wherein a plurality of combinations each including the photosensitive body (i.e.,

a unit comprising a photoconductive drum; col. 3, line 15), the exposure section (LED array, col. 3, line 16), and the developing unit (developing device, col. 3, line 15) are arranged along the conveyance route for every color different from each other (i.e., a tandem-type image forming system using an electrophotographic process to output Y, M, C, Bk color images onto a transfer belt, and transfer these images onto a paper sheet; col. 3, lines 10-13, fig. 8).

In view of the above, having the system of Anzai '242 and then given the well-established teaching of Nishigaki '534, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Anzai '242 as taught by Nishigaki '534, since Nishigaki '534 stated in col. 1 line 18 that such a modification would improve the printing productivity.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anzai (US 6,009,242) in view of Murahashi (US 5,864,652).

Regarding claim 14, Anzai '242 does not disclose the image forming device, wherein the printing engine comprises a laser engine including a laser scanner unit performing the scanning operation, the data of the raster being transferred from the transfer means to the laser engine on a raster-by-raster basis in synchronism with the scanning operation.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Murahashi '652. In particular, Murahashi '652 teaches the image forming

device, wherein the printing engine comprises a laser engine (202, fig. 5) including a laser scanner unit (a laser scanned electrophotographic drum type print engine, col. 3, line 42) performing the scanning operation, the data of the raster being transferred from the transfer means to the laser engine on a raster-by-raster basis in synchronism with the scanning operation (As image data is transferred to the FIFOs for one raster at a time, the contents of the Page Save FIFO are read-out by a data compressor such that the size of the image data is reduced, col. 12, lines 28-31).

In view of the above, having the system of Anzai '242 and then given the well-established teaching of Murahashi '652, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Anzai '242 as taught by Murahashi '652, since Murahashi '652 stated in col. 1, lines 15-21 that such a modification would ensure a "laser" printer employs an electrophotographic print engine in which the image to be printed onto paper or other media is first formed on a charged, light-sensitive drum by a laser which scans the drum.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anzai (US 6,009,242) in view of Yokomizo et al. (US 6,321,266) further in view of Lapstun et al. (US 7,222,780).

Regarding claim 15, Anzai '242 discloses the image forming device, wherein the compression means compresses image data through one of run length coding,

prediction coding, JBIG, bit plane conversion (multiple planes are used, col. 7, line 48, fig. 5A), prediction coding, block sorting, JPEG

Anzai '242 fails to further using a non-reversible compression DCT method, and wavelet conversion.

However, Yokomizo '266 teaches using a non-reversible compression DCT method (i.e., an ADCT compression/expansion circuit 115 compresses or expands intermediate tone data (each color has 8 bit length) which are constituted of RGB (RED, GREEN, BLUE) by employing a JPEG algorithm standardized in CCITT; see col. 16, lines 50-55),

Lapstun '780 teaches using wavelet conversion (An image object encodes an image in the JPEG 2000 wavelet-based compressed image format, col. 30, lines 43-44).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Anzai '242 to include an input/output apparatus system as taught by Yokomizo '266 and an inline printer assembly system as taught by Lapstun '780 in order to have the desired an ADCT compression technique, which can achieve non-reversible, high compression rate compression (see Yokomizo '266, col. 10, lines 16-17), and implemented in a print engine/controller by which to produce printed pages incorporating tags, along with other graphic and textual matter (see Lapstsun '780, col. 1, lines 19-21).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mori (US 6,965,453) discloses image processor for printing.

Nishigaki et al. (US 6,798,534) discloses image processing device.

Tanaka (US 2002/0126311) discloses image processing apparatus.

Miyake et al. (US 2001/0043354) discloses image processing apparatus.

Tamura (US 2003/0016391) discloses image forming apparatus and printer apparatus.

Hiraguchi et al. (US 6,295,117) discloses printing apparatus and printing system.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen H. Nguyen whose telephone number is 571-270-1229. The examiner can normally be reached on M-F from 9:00 AM-6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on (571)-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AN

07/24/07

KING Y. POON
~~PRIMARY~~ EXAMINER
Supervisory Patent